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Factsheet

DRY COW THERAPY

(Revision of Factsheet "Dry Cow Treatment", March 1984)

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Mastitis is the single most influential disease affecting both the quantity and quality of milk produced on Ontario dairy farms. Therefore, the economic significance of adopting a mastitis prevention program should be a major concern to all producers. An effective mastitis management program includes:

- * elimination of existing infections
 - ✓ dry cow therapy
 - ✓ lactating cow therapy
 - ✓ culling chronically infected cows
- * prevention of new infections
 - ✓ environmental control
 - ✓ equipment maintenance and function
 - ✓ recommended milking procedures
 - ✓ teat dipping
 - ✓ dry cow therapy
- * monitoring udder health
 - ✓ individual cow somatic cell count (SCC) program
 - ✓ California Mastitis Test (CMT)
 - ✓ laboratory culture

RATIONALE FOR DRY COW THERAPY

Treating the dry cow with specially formulated, long-acting antibiotics at drying-off, immediately following the last milking, is an effective practice in the battle against subclinical mastitis. Dry cow therapy eliminates existing infections and reduces the risk of new infections, thus improving udder health.

The advantages of dry cow therapy include:

- * a reduced incidence of new infections during the first three to four weeks of the dry period;
- * a much higher cure rate than lactational treatment of some organisms;
- * an aid in the regeneration of damaged milk secretory tissues;
- * a reduced incidence of mastitis in the next lactation;
- * an avoidance of milk loss due to treatment of mastitis in lactation;
- * a reduced level of mastitis, translating into increased milk production, better quality milk and greater dollar returns.

TYPES OF ANTIBIOTIC TREATMENTS

Intramammary infusion products fall into **two general categories** (see Table 1 back page for approved products):

1. the quick-release, short-acting types designed specifically to treat mastitis in lactating cows; and
2. the slow-release, long-acting types formulated specifically to treat subclinical mastitis in dry cows and to prevent new infections in dry cows.

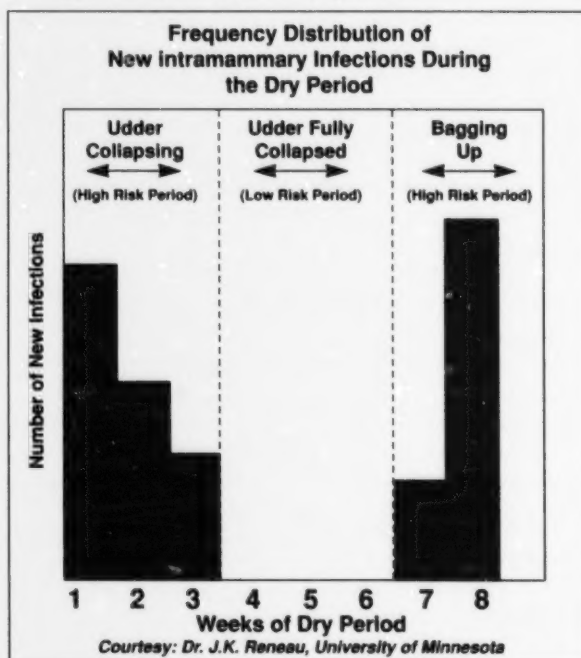


Figure 1.

When the slow-release preparation is infused into a dry cow, effective levels of antibiotics remain in the udder for 21 days or more. This antibiotic persistence achieves much higher cure rates during the dry period than that attained during lactation, especially for more resistant mastitis infections, such as those caused by staphylococci bacteria.

Selection of an effective infusion product should be based on laboratory culture and sensitivity tests that identify the organisms and the antibiotics to which they are sensitive. Consult your veterinarian for advice on the use of antibiotic products.

DRYING COWS OFF

Aim to dry cows off 50 to 55 days and never less than 40 days – before the expected calving date. This dry period is necessary for repairing and replacing damaged milk secretory cells in the udder.

Two common methods of drying cows off are intermittent milking and abrupt cessation of milking. The abrupt method is preferred, in conjunction with dry cow therapy, because the technique reduces the number of new infections. To be successful with abrupt drying off, it is usually necessary to first lower the cow's milk production by reducing feed and water intake for three to four days prior to drying off.

Cows with clinical mastitis should be treated to eliminate the mastitis first before drying-off.

After drying-off, the udder should be examined periodically until it is completely collapsed. If a quarter becomes clinically infected immediately following drying-off, it should be milked, treated for the clinical mastitis until eliminated, then re-treated with dry cow antibiotic.

DRY COW TREATMENT PROCEDURE

Intramammary infusion is a highly recommended but potentially dangerous procedure. The danger lies in unsanitary infusion practices which can introduce antibiotic-resistant environmental organisms into the udder. These environmental organisms may cause more extensive udder damage and a more severe infection than the original organism for which treatment was intended.

To avoid this risk, the following dry cow treatment procedures should be adhered to:

- * milk the udder out completely;
- * immediately following teat cup removal, dip all teats in an effective teat dip;
- * allow the teat dip to dry, then dab excess dip from teat ends with a clean single-service paper towel;
- * starting with the teats on the **far side** of the udder, disinfect the teat ends by scrubbing each for a few seconds with a separate alcohol-soaked cotton swab;
- * starting with the teats on the **close side** of the udder, infuse each quarter with a single-dose syringe of the recommended treatment. Insert the cannula only six millimeters (1/4 in.) into the teat end prior to infusing. Massage the treatment up into each quarter;
- * **single-dose syringes** are recommended rather than bulk containers, which may become contaminated with antibiotic-resistant organisms and become a source of infection;
- * immediately following treatment, dip all teats in an effective teat dip; and
- * when practical teat dip all treated cows at least once a day for two weeks after drying-off and for two weeks before calving.

TREATMENT PRECAUTIONS

Prior to infusing any antibiotic, always **read the label instructions** to determine the intended use, the recommended dosage level, the required withdrawal period, storage guidelines, and expiry dates.

Never deviate from the recommended dosage level. Exceeding the dosage level will certainly increase the antibiotic withdrawal period.

In addition to meeting withdrawal period requirements, **never administer dry cow treatment within one month of the expected calving date.** Always seek the advice of your veterinarian in special cases where a valuable, high-producing cow might benefit from a second treatment during the dry period. Primary concerns should include treatment procedure and the recommended withdrawal period of the product to be infused.

Storage of dry cow products, at temperatures recommended by the manufacturer, will assure that the antibiotic retains potency until the expiry date. Never assume the risk of treatment failure by using products that have passed the expiry date on the package. Always discard products damaged by freezing or exposure to high temperatures.

Single-dose syringes of dry cow antibiotic treatment are recommended because the risk of contamination by environmental organisms and yeasts is much higher for bulk multiple dose bottles than for single dose syringes.

When bulk containers are used, disinfect the rubber stopper with alcohol before each use; store the opened bottle in a clean, dry, dust-free place, use a new cannula for infusing each teat; use a sterile syringe for each administration. Do not return any unused product to the bottle; and never combine products from different containers.

Home-made antibiotic combinations should never be used for dry or lactating cow therapy. Efficacy, potency, quality assurance, freedom from adverse tissue reactions, and withdrawal time guidelines are seldom available for such preparations.

If a slow-release dry cow antibiotic is accidentally infused into a lactating cow, do not market the milk from the treated cow until the milk has passed a drug residue test indicating that it is free of antibiotic residues. Contact your Dairy Inspection Branch (field person) or your veterinarian to arrange for residue testing.

Maintain complete and accurate **records** of all clinical mastitis cases, cows treated, culture results from the laboratory, and the type of antibiotic treatments used. From these records, the effectiveness of treatments can be determined and decisions made regarding the selection of first-line therapies.

WHICH COWS TO DRY TREAT

There are two methods of dry cow therapy and both have their merits. However, producers are advised to consult their veterinarian and select the most appropriate treatment strategy based on the udder health status of their herd. The two methods are:

1. The preferred method is **blanket dry cow treatment**, the treatment of all quarters of all cows immediately following the last milking.

This method is simple to adopt, reaches all infected quarters, is more effective than selective treatment in preventing new dry period infections, and does not require laboratory and screening procedures.

Although total treatment costs for this method are higher than for selective therapy, economics still favor blanket dry cow therapy.

In general, use blanket dry cow therapy when either:

- * the bulk tank SCC >500,000;
 - * four or more clinical cases/100 cows/three days;
 - * the quarter infection rate >15% or,
 - * the individual cow SCC average for all cows >250,000.
2. The alternative strategy to the whole-herd treatment approach is **selective dry cow treatment** immediately following the last milking.

Use selective dry cow therapy when the monthly bulk tank SCC stays consistently below 200,000 and the quarter infection rate is less than 15%. Treat only the following cows:

- * individual cows with peak SCC >250,000;
- * cows that had clinical mastitis during lactation; and
- * cows from which a major mastitis organism has been cultured from the milk.

Cow selection for treatment is based on updated monthly records of individual cow SCCs or CMT scores. In addition, laboratory culture of milk samples will determine which quarters are infected and require treatment. Antibiotic sensitivity testing will assist in choosing the appropriate antibiotic for treatment.

Regardless of the treatment method employed, cows with an elevated SCC and low production in late lactation should be dried-off early and treated. This action will benefit the cow that is treated, as well as the herd, by removing a potential source of infection to other milking cows.

OTHER MANAGEMENT PRACTICES

Controlled studies have shown that 35 percent of all new intramammary infections occur during the dry period, particularly during the critical high-risk period of two to three weeks after drying-off and two weeks before calving (see Figure 1). Although dry cow therapy is an integral part of all mastitis control programs, effectiveness of therapy can be enhanced by other management practices, including:

- * clipping the hair on the udders, the flanks and inside the hind legs;
- * providing adequate space, ventilation, bedding, and lighting to ensure cleanliness and comfort at all times;
- * ensuring that the dry cow feeding program is nutritionally balanced, thus reducing the risk of milk fever at calving, which predisposes the fresh cow to mastitis;
- * adopting an effective fly-control program;
- * examining the udder at weekly intervals throughout the dry period;
- * taking precautions to prevent frozen teats; and
- * milking the cow out completely following calving. Flare-ups of clinical mastitis at calving are frequently related to incomplete milking at this critical time, and not to the fact that the cow was dry-treated as many dairy producers believe. Researchers have also reported that a reduction of milk production by as much as 10 percent is probable when fresh cows are milked intermittently the first few days of lactation.

SUMMARY

Mastitis remains the single most economically important disease affecting both milk production and quality. Mastitis can be prevented when an effective control program is adopted. Dry cow therapy is an essential part of this control program. To be fully effective, dry cow treatment should be used in conjunction with recommended practices for environmental control, equipment management, and milking management.

For Further Information:

Refer to the following OMAF Factsheets:

- * *Mastitis Prevention: Environmental Control*, Agdex 410/662
- * *Somatic Cell Counts – Description and Interpretation*, Agdex 410/662
- * *The Economics of High Somatic Cell Counts*, Agdex 410/662
- * *Proper Milking Procedures*, Agdex 410/725
- * *Understanding the Basics of Milking Machine*, Agdex 410/721
- * *Maintenance of Milking and Milk Handling Equipment*, Agdex 410/715
- * *Installation Recommendations for a Milk Pipeline*, Agdex 410/725

ACKNOWLEDGEMENT

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RECOMMENDED READING

Herd Health, Radostits & Blood

TABLE 1. DRY COW INTRAMAMMARY PRODUCTS

Manufacturer	Trade Name	Warnings
A.P.A. Sanofi Canada	Gallimycin 36	* Milk from treated animals not to be used for food within 36 hours after the last treatment.
Ayerst Labs	Cefa-Dri	* Not to be used within 30 days of calving. * Milk from treated cows not to be used for food during the first 84 hours after calving. * Infused animals must not be slaughtered for food until 42 days after the last infusion.
	Orbenin Dry Cow Suspension	* Must not be used within one month of expected calving date.
Interprovincial Cooperatives Ltd.	Co-Op Dry Cow II Mastitis Suspension	* Use immediately after drying off, but no less than 30 days prior to calving. * Treated animals must not be slaughtered for food for at least 30 days after the last treatment. * Milk from treated cows, which calve within 30 days of infusion, must not be used for food until the unexpired remainder of the 30 days has elapsed. * Milk from treated animals must not be used for food within 72 hours after calving.
Pfizer Canada Ltd.	Mastitis Care	* Milk from treated animals must not be used for food within 72 hours after the last treatment.
P.V.U. Sanofi Canada	Erythro-36	* Milk from treated animals must not be used for food within 36 hours after the last treatment.
	Erythro-Dry Cow	* Milk from treated animals must not be used for food within 72 hours after calving.
Rogar/STB Inc.	Combisecc Dry Cow	* Milk from treated animals must not be used for food within 96 hours after calving. * Treated animals must not be slaughtered for food for at least 60 days after the last treatment. * The product must not be used within 6 weeks of the expected calving date.
	Liquimast Mastitis Bulk Infusion	* Milk from treated animals must not be used for food within 72 hours after the last treatment.
	Neospan Mastitis Infusion	* Milk from treated animals must not be used for food within 72 hours after the last treatment.
The Upjohn Company	Novodry Plus Suspension	* Do not use in lactating cows. * Use immediately after drying off, but no less than 30 days prior to calving. * Treated animals must not be slaughtered for food for at least 35 days after the last treatment. * Milk from treated cows, which calve within 30 days of infusion, must not be used for food until the unexpired remainder of the 30 days has elapsed. * Milk from treated animals must not be used for food within 72 hours after calving.
	Albadry Suspension	* Do not use less than 30 days prior to calving. * Treated animals must not be slaughtered for human consumption for 30 days following udder infusion. * Not for human use.
West Agro-Chemical (Canada) Ltd.	Quartermaster	* Not to be used within 6 weeks of the expected calving date. * Milk from treated animals must not be used for food within 96 hours after calving. * Treated animals must not be slaughtered for food within 60 days from the last treatment nor within 96 hours after calving.